

REMARKS

Continued prosecution and reconsideration of the claimed subject matter in the accompanying patent application is respectfully requested in view of the amendments above discussion that follows.

Claims 1-10 are in the case and are before the Examiner.

I. The Rejections/Objections

1. Examiner Interview

Examiner Rahmjoo and Primary Examiner a Awad are thanked for the helpful discussion in the telephone interview in June. We had requested the telephone interview in order to clarify our understanding of the objections and rejections of the claim in view of the relied-upon art. The present claim amendments were made in view of the discussion.

1. Objection under 37 C.F.R. 1.111(b)

The Reply filed March 3, 2004 was objected to as allegedly failing to comply with 37 C.F.R. 1.111(b) for amounting to merely a general allegation that the claims define a patentable invention without specifically pointing out how the

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language of the claims patentably distinguishes the invention as claimed from the references.

In the first Reply, we argued (at page 8) that the radial visualizations disclosed by Grinstein provide a single overview of the clustered data, as opposed to overviews of each of the components of the clustered data, i.e. Grinstein included no multidimensional displays. That previous Reply noted that although Grinstein taught neighboring map units that may be shaded, its visualization of the clustered data was akin to data visualization methods already known in the art.

In the previously filed Response, we took the position that the language of the claims, particularly steps (b) and (c), differs from the methods of the art, including Grinstein et al., notably in shading the map units of the neighborhood map according the value of a select component of the data cluster to provide a component plane presentation. We did not believe that a claim amendment was necessary to differentiate the claims from the relied-upon art.

It is hoped that between the Examiner Interview and the present Reply and Amendment that this objection may be withdrawn or otherwise made moot, and the Examiner is thanked

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for making the present Office Action non-final in view of that objection.

In view of the Examiner Interview and the Office Action mailed March 22, 2004, we now understand more clearly the concerns of the Examiner; and we believe that the present Reply and Amendment addresses all of the issues that have been raised.

The Examiner emphasized that Grinstein et al. disclose the presentation of the clustered data as a radial visualization shaded according to the value of a select component, i.e. time; and re-asserted that such a visualization was within the scope of the claims as written.

It is believed that the presently proposed claim amendments specifically address this concern, emphasizing the multi-component nature of the component plane presentation method of visualization. It is believed that the claims are now clearly distinct from the disclosures of the relied-upon art.

As noted in the Specification, the present invention comprises a component plane presentation of the clustered data, in which a series of shaded maps are presented. In the art, shaded maps of clustered data are also presented, but those data visualizations of the art differ from the component plane

presentation in that the way the functions describing the data clustered to each unit is presented.

In the art (as mentioned briefly in the specification at paragraph [0003]), as in the disclosed radial visualization of data in Grinstein et al., the map units are shaded according the value of the function represented by that map unit. For example, the map units are colored according the value of the function (e.g. the  $f(x)$  value, where  $f(x)$  is a function, of  $x$ ; " $f(x) = Ax_1 + Bx_2 + Cx_3$ ") for the various times,  $t$ . The latter is what is disclosed in Grinstein et al., where the coloration shows the expression of the gene at various times in a radial visualization. The gene expression corresponds to the overall value of the function.

In contrast, in a process according to the present invention, the coloration of the map units of the clustered data is determined by the coefficient of the selected component. Continuing with the example above, if the selected component is  $x_1$ , then the value of the coefficient,  $A$ , of the function best describing the data clustered in that map unit is used to determine coloration of the map unit. (In a process of the invention, the visualization process is repeated for the other

components  $\{x_2$  and  $x_3\}$  and their coefficients  $\{B$  and  $C\}$  of the clustered data). Examples and discussion are provided in the specification at [0058], [0093-0094], [0099-0100], [0117-0119].

Such a visualization is mathematically distinct from a visualization where the output function is shown for the mapped data after clustering. Therefore, even though Grinstein et al. suggest providing and coloring radial visualizations of their data for various times, the data visualization method of the present invention is not taught or suggested by the disclosures therein.

2. Rejection under 35 U.S.C. § 112, Para. 1

Claim 1 stands rejected under 35 U.S.C. § 112, first paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

The Action maintains that the recitation in claim 1 line 6 (page 53) to "...the rows (or the columns)..." is unclear, and equally unclear is the recitation in line 9 of that claim (page 53) to "...the corresponding columns (or rows)..." . Although traversal of this basis for rejection is maintained,

the claims are amended herein to recite only "row" with the intention of covering the equivalent embodiment where column could equally well be recited, with specific reference to paragraph [0032], explaining the mathematical equivalence.

Thus, with the present amendment, applicants still will cover the embodiment covered by that claim, wherein the claim would read "...the rows..." in line 6, and "...the corresponding columns..." in line 9; as well as the mathematically equivalent embodiment wherein line 6 would have read "...the columns..." and line 9 read "...the corresponding rows...". A potential infringer should not be able to avoid claims of this patent by presenting the same data is presented using rows in place of columns and columns in place of rows, because the present patent applicant equally has the right to the equivalent. It should be clear from this file history that the claim amendment is not intended to give up rights to this equivalent, even in view of the present state of prosecution history estoppel caselaw in view of *Festo*. A claim is read in view of the specification and the file history, and now, rather than being able to clearly see coverage of the equivalent embodiment in the claim through the use of the parentheticals,

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people attempting to interpret the patent claims will have to find this clarification of intention buried in the prosecution history to make the claim clear.

The Action states that the reference in claim 1 line 13 (page 53) to "...the same or nearby neighboring map [units]..." is unclear, and that lack of clarity is accentuated by the later recitation in line 15 of that claim to "...of the neighbor[hood] map...". This basis for rejection cannot be agreed with and is respectfully traversed.

The attention of the Examiner is respectfully drawn to the drawings as reference for this discussion. Although Fig. 2 is not an embodiment of the present invention, it is illustrative of this point in consideration of the clarity rejection pertaining to claim 1 line 13 (page 53) to "...the same or nearby neighboring map [units]...". The full phrase is "a neighborhood map comprised of map units where similar data is mapped to the same or nearby neighboring map units". A "neighborhood map" is presented as the entire display (which looks like a honeycomb--eight of which are shown in Fig. 1 and one of which is shown in the upper portion of Fig. 2). A "map unit" is one of the geometric subunits of that honeycomb. With

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regarding to the clarity rejection pertaining to claim 1 line 15, that phrase should be "...of the neighborhood map..." not "...of the neighboring map..." (*emphasis added*).

The enlarged C1 at the lower left of Fig. 2 shows how the data looks that is mapped to map unit C1, the upper left cell in the map comprising the upper part of Fig. 2. If a new piece of data is obtained that looks exactly like that bar graph, it would be mapped to map unit C1...but if it looked more like the neighboring map unit (e.g. C2), that data would be mapped to that neighboring map unit. This grouping of similar data is the clustering. For the claimed invention, similar data is also clustered into map units, the more similar the data, the closer together the map units, but the visualization of the data according the invention is as shown in Fig. 1.

In view of the clarifying discussion above, it is respectfully requested that this basis for rejection of claim 1 under 35 U.S.C. § 112, first paragraph, be withdrawn.

The Action states that the reference in claim 7 line 13 (page 54) to "...the outputs of the experiment..." is unclear as to whether it is referring to the same or different experiments, and thus the claim is rejected under 35 U.S.C.

§ 112, first paragraph. The language was changed to "output of that experiment for the parameter  $n$ " to clarify. This basis for rejection has been made moot.

In view of the clarifying amendment, it is respectfully requested that this basis for rejection of claim 7 under 35 U.S.C. § 112, first paragraph, be withdrawn.

The Action states that the reference in claim 7 line 14 (page 54) to "...with variations in a parameter..." is unclear as to what the parameter corresponds, and thus the claim is rejected under 35 U.S.C. § 112, first paragraph. The language change to "output of that experiment for the parameter  $n$ " also clarifies this matter. This basis for rejection has been made moot.

In view of the clarifying amendment, it is respectfully requested that this basis for rejection of claim 7 under 35 U.S.C. § 112, first paragraph, be withdrawn.

The Action states that the reference in claim 7 line 20 (page 54) to "...individuals mapped..." is unclear as to what the individuals are and to what they correspond, and thus the claim is rejected under 35 U.S.C. § 112, first paragraph. This language is derived from the art pertaining to SOM. The

"individuals" were the individual input matrix rows, clarified in amendment by calling them "individual experiments" in part (i) of claim 7, with a concurrent amendment in part (ii) of claim 7 to provide proper antecedent basis for the term. This basis for rejection has been made moot.

In view of the clarifying amendment, it is respectfully requested that this basis for rejection of claim 7 under 35 U.S.C. § 112, first paragraph, be withdrawn.

The Action states that the claim 9 was rejected under 35 U.S.C. § 112, first paragraph, for similar reasons as claim 1 (i.e. the parentheticals "or the columns"). The parallel language in claim 9 was amended as in claim 1. Thus, this basis for rejection has been made moot.

In view of the clarifying amendment, it is respectfully requested that this basis for rejection of claim 9 under 35 U.S.C. § 112, first paragraph, be withdrawn.

In view of the clarifying amendments described above, it is respectfully requested that the basis for rejection of claims 2-6, 8 and 10 under 35 U.S.C. § 112, first paragraph (as indefinite by virtue of their dependency upon indefinite claims) be withdrawn.

3. Rejections under 35 U.S.C. § 102 and § 103

Claims 1-4 and 8-9 stand rejected under 35 U.S.C.

§ 102 as allegedly being anticipated by the disclosures of Grinstein et al., U.S. Patent Application Publication No. 2003/0030637. In view of the present amendments this basis for rejection of the pending claims is respectfully traversed.

Claims 5-6 stand rejected under 35 U.S.C. § 103 as allegedly being unobvious over the disclosures of Grinstein et al., U.S. Patent Application Publication No. 2003/0030637. This basis for rejection of the claims cannot be agreed with and is respectfully traversed.

Grinstein et al. present a method of organizing (clustering) the original data (using a record attribute reduction method, see e.g. [0010] and [0011] of Grinstein et al.). Organization of the data is a precursor step to Claim 1, step (a), which begins with clustered data.

When we look in Grinstein et al. to the methods of presenting and visualizing the data clustered according to his invention, e.g. [0212], it is evident that the data visualization methods of the art are used, rather than the

particular advance made by the present inventor of the claims at issue. The radial visualizations in Examples 3-5 of Grinstein et al. provide a single overview of the clustered data, as opposed to overviews of each of the components of the clustered data. Although the neighboring map units may be colored in Grinstein et al., that visualization of the clustered data is more akin to the state-of-the-art data visualization methods (as in Fig. 2 of the subject application), that has a single overview of the clustered data, rather than a view of the *components* of the clustered data. It is expected that the "record categorization subsystem embodiment employing a polygonal visualization" referred to in [0237] Grinstein is even more closely analogous to Fig. 2 of the subject application. The brief mention of multi-dimensional displays in [0212] of Grinstein et al. do not teach or suggest the component plane presentation utilized by the present inventor, nor do they provide an enabling disclosure thereof.

The disclosures of Grinstein et al. do not teach or suggest steps (b) and (c) of Claim 1, et seq.

In view of the discussion above showing that the disclosures of Grinstein et al. do not teach or suggest the

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claimed invention, it is respectfully requested that this basis for rejection of Claims 1-4 and 8-9 under 35 U.S.C. § 102 be withdrawn.

In view of the discussion above showing that the disclosures of Grinstein et al. do not teach or suggest the claimed invention, it is respectfully requested that this basis for rejection of Claims 5-6 under 35 U.S.C. § 103 be withdrawn.

4. Objections to Claims 7 and 10

The notation of allowable subject matter in claims 7 and 10 if rewritten in independent form including all of the limitations of the base claim and any intervening claims is gratefully acknowledged. In order to save the payment of a fee at the present time for an additional independent claim, the amendment to overcome this objection has not been made at this time. It is respectfully submitted that the above discussion regarding the rejections of the base claims and any intervening claims will obviate this basis for objection to Claims 7 and 10, particularly in view of the fact that the Office Action was non-final.

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II. Art of Record

The Examiner is thanked for bringing to our attention the disclosures of Kaufman et al., U.S. Patent No. 5,544,283 "Method and Apparatus for Real-Time Volume Rendering From an Arbitrary Viewing Direction", and Brethour et al., U.S. Patent No. 5,398,290 "System for Measurement of Intramuscular Fat in Cattle", and making these disclosures of record.

SUMMARY

Claims 7 and 10 were noted to be allowable but for their dependence upon unallowed claims. Claims 7 and 10 are currently amended to independent form, incorporating all of the limitations of the claims from which they had previously depended. Claim 1 was rejected under 35 U.S.C. § 112, first paragraph; Claims 1-4 and 8-9 were rejected under 35 U.S.C. § 102 and Claims 5-6 were rejected under 35 U.S.C. § 103. The bases for rejection of the claims have been dealt with and shown to be inapposite.

The application is believed to be in condition for allowance. An early notice to that effect is earnestly solicited. A fee is enclosed for the Petition under 37 C.F.R.

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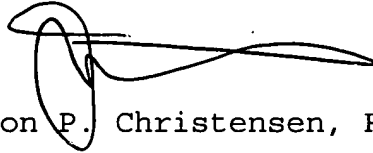
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§ 1.136(a) for a small entity. No further fee or petition is believed to be necessary. However, should any further fee be needed, please charge our Deposit Account No. 23-0920, and deem this paper to be the required petition.

The Examiner is requested to phone the undersigned should any questions arise that can be dealt with over the phone to expedite this prosecution.

Respectfully submitted,



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Enclosures

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Postcard